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Prepared for: File

Project Title: Florence Copper

Project No.: 149050

Subject: Florence Copper Project, Temporary APP and UIC Permits,

Ambient Events 9 and MW-01s 6 and 7

Date: May 18, 2018

To: Ian Ream

From: Barb Sylvester

Groundwater sampling at the Florence Copper Project site took place March 5 through February 8 and March 19, 2018. Twelve (12) Point-of-Compliance (POC) and Supplemental wells were sampled as part of the ambient monitoring program for the Temporary APP and UIC permits. Wells MW-01-LBF and MW-01-O were sampled twice during the month, fourteen days apart. Fifteen total samples were collected, including one duplicate sample. The electric pump in M61-LBF was replaced with a low-flow bladder pump immediately prior to sampling. Table 1 summarizes the sampling activities.

Ambient samples were to be analyzed for metals, inorganics, organics, and radionuclides (Table 2). Samples for metal analysis were filtered in the field.

Table 1. Summary of March 2018 Ambient Event					
Date	Sample Identification	Pump Style	Analyses		
March 5, 2018	M54-LBF	Low-Flow	Level II		
March 6, 2018	M54-O	Low-Flow	Level II		
	M57-O	Low-Flow	Level II		
	M58-O	Low-Flow	Level II		
March 7, 2018	M52-UBF	Low-Flow	Level II		
	M55-UBF	Low-Flow	Level II		
	M56-LBF	Low-Flow	Level II		
	M59-O	Low-Flow	Level II		
March 8, 2018	M60-O	Low-Flow	Level II		

Table 1. Summary of March 2018 Ambient Event					
Date Sample Pump Style Analyses					
March 8, 2018	M61-LFB	Low-Flow	Level II		
	MW-01-LBF	Low-Flow	Level II		
	MW-01-O	Low-Flow	Level II		
March 22, 2018	MW-01-LBF M63.0 (Duplicate)	Low-Flow	Level II		
	MW-01-O	Low-Flow	Level II		

Table 2. Analytical Parameters					
Analysis	Method	Preservative			
Inorganic Common Ions					
pH (lab)	SM 4500H+	None			
Electroconductivity (EC) (lab)	SM 2510B	None			
Bicarbonate Alkalinity	SM 2320B	None			
Carbonate Alkalinity	SM 2320B	None			
Hydroxide Alkalinity	SM 2320B	None			
Total Alkalinity	SM 2320B	None			
Chloride	EPA 300.0	None			
Fluoride (Level I)	EPA 300.0	None			
Nitrate as N	EPA 300.0	None			
Nitrite as N	EPA 300.0	None			
Sulfate (Level I)	EPA 300.0	None			
Total Dissolved Solids (Level I)	SM 2540C	None			
Cation/Anion Balance	Calculation	<u>-</u>			
Cyanide	EPA 335.4	NaOH			
Formation-Relate	d Radiochemicals				
Gross Alpha	600/00-02	None			
Gross Beta	900.0	None			
Radium 226	903/GammaRay HPGE	None			
Radium 228	904/GammaRay HPGE	None			
Total Uranium Isotopes (if G. Alpha >12.0)	ASTM 6239	None			
Radon 222	7500-Rn	None (Voas)			
Total Uranium (unfiltered total as mg/L)	EPA 200.8	HNO3			
Process-Rela	ted Organics				
Extractable Fuel Hydrocarbons (Diesel Range Organics)	EPA 8015D	None			



Table 2. Analytical Parameters						
Analysis Method Preservative						
Benzene	EPA 8260B	HCI Voas				
Ethylbenzene	EPA 8260B	HCI Voas				
Toluene	EPA 8260B	HCI Voas				
Total Xylene	EPA 8260B	HCI Voas				
Carbon Disulfide	EPA 8260B	HCI Voas				
Napthalene	EPA 8260B	HCI Voas				
Octane	EPA 8260B	HCI Voas				
Trace Meta	als and Cations (Filtered-Dissolved)					
Aluminum	EPA 200.8	HNO3				
Antimony	EPA 200.8	HNO3				
Arsenic	EPA 200.8	HNO3				
Barium	EPA 200.8	HNO3				
Beryllium	EPA 200.8	HNO3				
Calcium	EPA 200.7	HNO3				
Cadmium	EPA 200.8	HNO3				
Chromium	EPA 200.8	HNO3				
Cobalt	EPA 200.8	HNO3				
Copper	EPA 200.8	HNO3				
Iron	EPA 200.7	HNO3				
Lead	EPA 200.8	HNO3				
Magnesium (Level I)	EPA 200.7	HNO3				
Manganese	EPA 200.8	HNO3				
Mercury	EPA 245.1	HNO3				
Nickel	EPA 200.8	HNO3				
Potassium	EPA 200.7	HNO3				
Selenium	EPA 200.8	HNO3				
Sodium	EPA 200.7	HNO3				
Thallium	EPA 200.8	HNO3				
Zinc	EPA 200.8	HNO3				

Observations/Problems

- 1. Wells MW-01-LBF and MW-01-0 were sampled twice during the month, fourteen days apart.
- 2. The electric pump in M61-LBF was replaced with a low-flow bladder pump immediately prior to sampling. This may have contributed to higher turbidity results during sampling. It is not expected to have a significant impact on sample results.
- 3. Turbidity measurements above 5 NTUs were observed in M61-LFB and MW-01-LBF.



Table 3. Summary of Water Levels						
Sample Event: Ambient Event 9, MW-01s 6&7				Measured By:	M. Orcutt	
				Elevation of	Water Level	
		Depth to Water	Description of	Measuring Point	Elevation	
Well ID	Sample Date	(feet bls)	Measuring Point	(feet amsl)	(feet amsl)	Comments
M52-UBF	3/7/2018	228.79	TOC	1485.04	1256.25	
M54-LBF	3/5/2018	226.85	TOC	1481.89	1255.04	
M54-0	3/6/2018	222.93	TOC	1482.40	1259.47	
M55-UBF	3/7/2018	223.88	TOC	1479.21	1255.33	
M56-LBF	3/7/2018	223.54	TOC	1478.69	1255.15	
M57-0	3/6/2018	219.15	TOC	1478.75	1259.60	
M58-0	3/6/2018	221.88	TOC	1481.16	1259.28	
M59-0	3/7/2018	222.45	тос	1480.26	1257.81	
M60-0	3/8/2018	220.10	тос	1477.45	1257.35	
M61-LBF	3/8/2018	224.40	TOC	1480.80	1256.40	
MW-01-LBF	3/8/2018	223.76	тос	NM	NA	
MW-01-LBF	3/22/2018	229.32	TOC	NM	NA	
MW-01-0	3/8/2018	221.45	TOC	NM	NA	
MW-01-0	3/22/2018	230.05	TOC	NM	NA	

amsl = Above Mean Sea Level

TOC = Top of Casing

TOM = Top of Monument

NM = Not Measured

Table 4. Summary of Field Parameters							
Sample Event:	Sample Event: Ambient Event 9, MW-01s 6&7 Measured By: M. Orcutt						
		Temperature		Conductivity	Turbidity		
Well ID	Sample Date	(°C)	рН	(µmhos/cm)	(NTU)	Comments	
M52-UBF	3/7/2018	22.2	7.38	1,420	0.41		
M54-LBF	3/5/2018	22.3	7.16	1,488	0.42		
M54-0	3/6/2018	21.4	7.97	764	0.28		
M55-UBF	3/7/2018	21.6	7.10	1,479	2.08		
M56-LBF	3/7/2018	21.8	7.18	1,407	3.37		
M57-0	3/6/2018	22.5	7.90	861	4.12		
M58-0	3/6/2018	22.1	7.42	1,498	4.28		
M59-0	3/7/2018	22.1	7.72	913	0.49		
M60-0	3/8/2018	21.3	7.97	882	1.25		
M61-LBF	3/8/2018	23.3	8.09	749	6.55		
MW-01-LBF	3/8/2018	22.8	7.41	1,469	9.18		
MW-01-LBF	3/22/2018	23.4	7.57	1,490	2.73		
MW-01-0	3/8/2018	22.6	7.72	1,351	1.60		
MW-01-0	3/22/2018	23.4	7.75	1,433	0.70		

[°]C = degrees Celsius

μmhos/cm = Micromhos per Centimeter

NTU = Nephlometric Tubidity Units

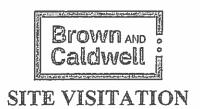
[°]F = degrees Fahrenheit



SITE VISITATION

JOB NAME: Plurence Copper JOB NUMBER: 150342 000 201
PERSONNEL: M. OrauM DATE: 3-5- 7018
COMMENTS:
0750. On site, pressed up sample bottles
and OFO Bauipment.
Descend case of GEO fitters brought to site,
M3, my remaining for GED wells
M16, M20, and ATT remaining electric wells,
0930 (Mab for Batbres) MZZ
Mab to Wells to Warm up equipment for
Calibrations.
1042 Sampled M3 -EL
Short lunch and return to Ambient
Shart lungh and refurn to Ambient
1132M16-Gu(E) Started by Ian
1300 Sampled Ambient POC MS4-LBF
1407 Sampled MIG-GU(R),
1425 Mob back to office and drop off DED
and turn over samples to I an
Angas on Site, Left Samples for Iay
3 drap, 4 prekup, 1 in truck,
1505 Off 51 Fr
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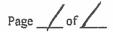
JOB NAME: Florence Copper JOB NUMBER: 150342
PERSONNEL: M. Croat DATE: 3-6-2018
COMMENTS:
0750 On 51te, Picked up OED and Ambrent cooler, Mob to wells to warm up BC's Wa meters for APP calibrated meders white first well owner
cooler,
Mob to wells to warm up BC's Wa neters to
APP Calibration
Calibrated meters white first well pumps
0918 Sampled M54-0
10:00 Mot to grab Vitrager and Return.
11:17 Sampled MS8-6
10:00 Mon to grab Nitrogen and Return. 11:17 Sampled MS8-0 1200 Short lunch and putum to Ams. Wells,
1345 Sampled M57-0
1345 Sampled M57-O 1430 Separate Palled Radon Samples from Cooler and placed & into smaller occiler w/ Ice for Rad Safety Labs, Mob back to return QED and hand Turner Samples to Tan
Cooler and placed & into smaller cooler w/ 100
for Rad Safety 2005,
Mob back to resturn BED and hand Turner
Samples to Dan
1455 Of Site
Cont
3/6/10



JOB NAME: Florence Copper	JOB NUMBER:
PERSONNEL: M. OncorTT	DATE: 3/7/2018
COMMENTS:	
and Mob to pumping Started 316 @ 1625 hrs	up QEO equipment
and Mob to pumping	Well M2Z-O
Started 316 0' 1625 hrs	. /
Calibrated BC's Wam	etens
0815 San /2 0 1122 00	M22-0
0815 Sampled MAZO 00 1 0856 Sampled M55-UBI	
1050 5 2mpled 1856 - CB1	
1040 Mas to P/4 more both	Hes and short lunch,
In to Move generate	r to MZO-6 for last pump
, , , , , , , , , , , , , , , , , , , ,	
1218 Sampled M59-0	- 2 for the West
Dilmake to get to ms Dilmake to get to ms	Z Irom rie acst.
1370 Sampled M20-0(R	2)
1412 Sampled MSZ-UB Samples to Ign 1530 off Site	3F
Samples to Ign	
1530 of site	
	п



JOB NAME: _	florence	Copper	JOB NUMBE	R:	,301
PERSONNEL:	MI Oran A		DATE:3/	8/2018	
COMMENTS:					
0720	On site, Ambrent O	preked	up GED	and Co	relen
tor 1	Ambrent G	w Samp	1/29/		
Spoke	with Par	2 and B	ars, In	nay weed	1 te
hPIO IX	154011 000	Into VII	61 This m	ornina.	
4 Ambo	ents rema	ining, D	up may be	e done	inz
Weeks	with mi	W-01;3			
One m	ore set	at lever	I trom	Turner	
2 Se	ts remain	in Samo	le Room a	on Sity	
Warma	Jup an	O Calibra	a ted BC	Wan	exers
	· · · · · · · · · · · · · · · · · · ·				
0845 Sal	mpled 1	1160-0			
1028 San	roled Mi	11-01-0			
BED	being in	stalled	in M61	by Iona	Geo.
Stup 1	y to help	Check	in.		
240-10	to dec apo	si Apad	n + depl	or pump	(lunch)
1310 50	inpleed mw	1-01-4R	12	1111	
1420 50	impled M	161-6RF	· · · · · · · · · · · · · · · · · · ·		
	Mas bad				
Sau	- des de	Zan			
1545	off Site	4 A	1 Safel	<i>f</i>	
1573	01 - 0.10	70	10 3-1-		
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7					
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				75 W	
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JOB NAME: _	Morence Copper	JOB NUMBER:	150342,30/
	M. Orcall	DATE: 3-2	Z-Z018
COMMENTS:			
0850 01	cocles, and Nit o Min-1 wells an	with Ian a	and loaded
QED,	coolers, and Nit	rogen,	
Mob +	o Mw-1 wells an	& warmed	up Bc
Wan	refers for callbra	froh,	,
Micro	purged wells a	nd Sampl	ed level II
1627 San	10/01 MW-01-C	<u> </u>	
1150 Sam	bled MW-01-LB	Fw/Dup	M63,00 12:10,
		`	
1310 She	t lunch and refe	uru,	<u></u>
<u>Unloc</u>	aged QED & Nito	egen,	
	oles to Ian for safety bottles to	Jurner	
Kad	patety bottles to	copy B.	0,
1405 CA	C.T.		<u>,</u>
1705 004 1	3110,		
		<u> </u>	nd 22/10
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		./ ک	22/18
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PROJECT: Florence Copper			墓	WELL ID:	M52-UBF
				SAMPLED BY:	M. Orcutt
WELL INFORMATION				DATE :	3/7/18
TD Casing:	275	feet	Time Purge Start:	135Z	hours
Static Depth to Water:	228,7	7 9 feet	Time Sample Start:	1412	hours
System Purge before Params	2.6	liters	Time Purged:	20	minutes

Temperature (°C)	рH	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulldown DTW (feet)	Comments
+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ft	QED Bladder Pump Intake 237.5'
22,2	7,40	1420	5184	0130		3,0	0100	Clear, NO ODORS
22,1	7139	1422	6110	0,59	033		0,00	
2211	7138	1421	5191	0,91	0133	5,0	0,00	⇒
2212	7138	1420	5,90	0,41	0(33	610	0100	
	29					14		
								1 11 11111
								Law flow for vac?
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	*							
	(°C) +/-3% 22,2 22,1 22,1	(°C) +/-3% +/-0.1 22.2 7.40 22.1 7139 22.1 7138	(°C) (umhos/cm) +/-3% +/-0.1 +/-3% 22.1 7.40 1420 22.1 7139 1422 22.1 7138 /421 22.2 7138 1420	(°C) (umhos/cm) (mg/L) +/-3% +/-0.1 +/-3% 10% or <.5 22.2 7.40 1420 5.84 22.1 7.39 1422 6.10 22.1 7.38 /421 5.91 22.2 7.38 1420 5.90	(°C) (umhos/cm) (mg/L) (NTU) +/-3% +/-0.1 +/-3% 10% or <.5 10% or <5 22.2 7,40 1420 5184 0130 22.1 7139 1422 6110 0159 22.1 7138 1421 5191 0191 22.2 7138 1420 5190 0141	(°C) (umhos/cm) (mg/L) (NTU) (L/min) +/-3% +/-0.1 +/-3% 10% or <.5 10% or <5 <0.5L/min 22.2 7.40 1420 5.84 0.30 22.1 7.39 1422 6.10 0.59 0.33 22.1 7.38 /421 5.91 0.91 6.33 22.2 7.38 1420 5.90 0.41 0.33	(°C) (umhos/cm) (mg/L) (NTU) (L/min) Volume (L) +/-3% +/-0.1 +/-3% 10% or <.5 10% or <5 <0.5L/min 22.2 7.40 1420 5184 0130 3.10 22.1 7139 1422 6110 0159 0.33 410 22.1 7138 /421 5191 0191 6133 5.0 22.2 7138 1420 5190 0141 0133 610	(°C)

Sample ID: M52-UBF Sample Time, 1412 Duplicate (ID = 14) Time 14) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper				WELL ID: _	M54-LBF
				SAMPLED BY: _	M. Orcutt
WELL INFORMATION				DATE :	3/5/18
TD Casing:	630	feet	Time Purge Start:	1233	hours
Static Depth to Water:	226,85	feet	Time Sample Start:	1300	hours
System Purge before Params	3.9	liters	Time Purged:	27	minutes

Time	Temperature (°C)	pH	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulldown DTW (feet)	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ft	QED Bladder Pump Intake 470'
1250	22,4	7,13	1496	5,30	2.24	0.23	4,0	0102	Clear, NO OBORS
1253	22,3	7,15	1492	5,31	1,48	0,33	5,0	0,02	<u>'</u>
1256	22,3	7,15	1490	5,41	0,50	0133	610	0,02	
1259	2213	7116	1488	5/21	0142	0133	7,0	0102	
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Sample ID: M54-LBF Sample Time, 1300 Duplicate (ID = 11 PK, Time 17) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper				WELL ID:	M54-O	
				SAMPLED BY:	M. Orcutt	
WELL INFORMATION				DATE :	3 16 /18	
TD Casing:	1,200	feet	Time Purge Start:	0824	hours	
Static Depth to Water:	222.93	feet	Time Sample Start:	0918	hours	
System Purge before Params	9.2	 liters	Time Purged:	54	minutes	

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulldown DTW (feet)	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min	ļ _.	<0.5 ft	QED Bladder Pump Intake 1000'
0900	18,9	7,35	932	1,20	0,54	0.26	9.5	0,02	Clear, No oders,
0905	21,3	7,78	777	0,62	0,41	0,20	10,5	0,03	
0909	21,3	7,90	770	0,40	0,20	0,25	11.5	0104	
0913	21.3	7,95	766	0132	6.16	0,25	12,5	0104	b garage
0917	21,4	7,97	764	0,27	0,28	0,25	13,5	0104	@ Held for Dio repair
							_	ď	@ 9.5 /hes
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Sample ID: M54-O Sample Time, 6918 Duplicate (ID = 1/14 Time 1/14) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

			001101771121101111111111111111111111111			
PROJECT: Florence Copper				WELL ID:	M55-UBF	
				SAMPLED BY:	M. Orcutt	
WELL INFORMATION				DATE :	3 / 7 /18	
TD Casing:	260	feet	Time Purge Start:	0831	hours	
Static Depth to Water:	223,88	feet	Time Sample Start:	0856	hours	
System Purge before Params	2.8	liters	Time Purged:	25	minutes	

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume	Pulldown DTW	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min	(L)	(feet) <0.5 ft	QED Bladder Pump Intake 250'
0842	21.5	7,12	1474	5,08	3,55	3,0	0,27	0,03	Clear, NO ODORS
0846	21,5	7/11	1477	4,96	2,82	4,0	0125	0,03	, , , , , , , , , , , , , , , , , , ,
0450	21,6	7,10	1479	5,50	2148	5,0	0125	0103	
0854	2116	7110	1479	5124	2108	6.0	0,25	0103	
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Sample ID: M55-UBF Sample Time, O856 Duplicate (ID = 1/17) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper			ra .	WELL ID:	M56-LBF	
	 -			SAMPLED BY:	M. Orcutt	
WELL INFORMATION				DATÉ :	3/7/18	
TD Casing:	340	feet	Time Purge Start:	0941	hours	
Static Depth to Water:	223.54	feet	Time Sample Start:	10:00	hours	
System Purge before Params	2.4	_ liters	Time Purged:	19	minutes	

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulldown DTW (feet)	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ft	QED Bladder Pump Intake 330'
0949	21.8	7116	13%	5,80	5,30	0,37	3,0	0,25	Clear, NO ODORS
0952	21.8	7,20	1404	460	4.39	0,33	4.0	0,25	
0955	21.8	7,19	1406	1166	4,17	0.33	5,0	0,24	
0958	21.8	7118	1407	1,73	3,37	0133	6,0	0123	
									Law flow for vac?
									Low How ter Voc
<u> </u>									
								-	

Sample ID: M56-LFB Sample Time, 10:00 Duplicate (ID = MIA, Time MH) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper				WELL ID:	M57-O	
				SAMPLED BY:	M. Orcutt	
WELL INFORMATION				DATE :	3 16 /18	
TD Casing:	1,200	feet	Time Purge Start:	13:06	hours	
Static Depth to Water:	219,15	feet	Time Sample Start:	1345	hours	
System Purge before Params	8.7	liters	Time Purged:	39	minutes	

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulldown DTW (feet)	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ft	QED Bladder Pump Intake 950'
1333	22,7	7.81	854	1,24	5,77	0.33	9,0	0.05	Clear, NO ODORS
1337	22.6	7.84		1,2/	5,34	0,25	10,0	0.06	
1340	22.6	7,87	859 859	1,14	4,76	0,33	11,0	0,06	
1343	22.5	7.90	861	1.09	4112	0133	12,0	0106	
									Low flow for Voc
									1.020 1.7.000
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Sample ID: M57-O Sample Time, 1345 Duplicate (ID = W/H, Time W/H) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper					WELL ID:	<u>M58-O</u>	
·					SAMPLED BY:	M. Orcutt	
WELL INFORMATION					DATE:	316/18	
TD Casing:	1,200	feet		Time Purge Start:	10:40	hours	
Static Depth to Water:	221,88	feet	1	ime Sample Start:	11317	hours	
System Purge before Params	8.7	liters		Time Purged:	.37	minutes	

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulldown DTW (feet)	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ft	QED Bladder Pump Intake 950'
1106	22.2	7,41	1503	0189	853	0,34	9,0	0.00	Clear, NO ODORS
1109	22,2	7,41	1500	1,00	7,44	0133	10,0	0,00	
11:12	22.1	7,42	1501	1125	5144	0133	11,0		_
11:15	2211	7142	1498	1,30	4.28	033	12,0	V	
									Lew flow for VOC
							**		
									2,4,6,8

Sample ID: M58-O Sample Time, 11:17 Duplicate (ID = 11 A / 14) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper				WELL ID:	M59-O
				SAMPLED BY:	M. Orcutt
WELL INFORMATION				DATE :	3/7/18
TD Casing:	1,200	feet	Time Purge Start:	11:46	hours
Static Depth to Water:	222.45	 feet	Time Sample Start:	1218	hours
System Purge before Params	8.7	liters	Time Purged:	32	minutes

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume	Pulldown DTW	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min	(L)	(feet) <0.5 ft	QED Bladder Pump Intake 950'
12.09	22.1	7,73	888	0,72	0.88	0.39	9.0	0,00	Clear, No ODORS
1212	22.2	7,71	997	0171	0154	0133		0,00	
1214	22,2	7,71	907	0.60	0,62	0,50	11,0	0,00	
1216	2211	7,72	943	0151	0149	0,50	12,0	0100	
									Low How for Vocs
									LOW HOW FOR VOC
					15				
					•				
									- CSO
								ļ	
									2.4.6,8

Sample ID: M59-O Sample Time, 1219 Duplicate (ID = 1/14 Time N/A) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

		GROUND	WATER SAMPLING FIELD DATA			
PROJECT: Florence Copper				WELL ID:	M60-O	
				SAMPLED BY:	M. Orcutt	
WELL INFORMATION				DATE:	3/8/18	
TD Casing:	1,200	feet	Time Purge Start:	0759	hours	
Static Depth to Water:	220:10	feet	Time Sample Start:	6845	hours	
System Purge before Params	8.7	liters	Time Purged:	47	minutes	

	Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)		Comments 70135
		+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ₅ ft /	QED Bladder Pump Intake 950'
	0833	20,9	7,92	908	1,37	2.31	0,25	9,0	0,45	Clear, NO ODORS
37	0833	21:1	7,94	897	1,20	2,26	0,25	10,0	0135	
	0840	21,1	7.96	887	1,00	1.51	0,33	11,0	0,35	
	0843	21,3	7,97	882	0.99	1,25	0333	12,0	0.35	
		E- ma								
		19								Switched out Nitrogan
		190							l 	
		18								0. 0.
										Low How for Voc"
		\$P								
- 1	E		19							
Ī										24.6.8

Sample ID: M60-O Sample Time, O845 Duplicate (ID = 1/4 , Time 1/4) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper			10		WELL ID:	M61-LBF	
					SAMPLED BY:	M. Orcutt	
WELL INFORMATION					DATE :	3/8/18	
TD Casing:	635	feet		Time Purge Start:	1356	hours	
Static Depth to Water:	224,40	– feet		Time Sample Start:	1430	hours	
System Purge before Params	4.5	 liters		Time Purged:	34	minutes	

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulidown DTW (feet)	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min	(-)	<0.5 ft	QED Bladder Pump Intake 535'
1416	2313	8,20	745	8156	7,50	0,25	5,0	0,70	LT. cldy NO ODERS
1420	2312	8.12	748	6,41	7.73	0.25	6,0	0.70	777
1424	23,2	8,10	749	6,21	7,32	8125	7,0	0.73	
1428	23:3	8109	749	5,94	6.55	0,25	8,0	0,74	
				` ′					
									, , , , , , , , , , , , , , , , , , , ,
									Reduced disch. Time
								<u> </u>	Q 1416 hm
				0				V.	Low flow for VOCT OED installed = 1130 on 3/8/18
		"							==
									OED installed = 1130
							_		on 3/8/18
					<u></u>				
									2.

Sample ID: M61-LFB Sample Time, 1430 Duplicate (ID = 1177). Time 1171 Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT:	Florence	Copper	
PROJECT:	I IOI CIICE	Cobbei	

WELLID: MW-01-LBF

SAMPLED BY: M. Orcutt

1237

WELL INFORMATION

DATE: 3/8/18___

TD Casing: 630 feet

Time Purge Start:

hours

Static Depth to Water: 223,76 feet

Time Sample Start:

hours

System Purge before Params

5.0 liters

Time Purged:

minutes

Time	Temperature	рН	EC	DO	Turbidity	Pump Rate	Purge	Pulldown	Comments
	(°C)	-	(umhos/cm)	(mg/L)	(NTU)	(L/min)	Volume	DTW	
					<i>a</i>		(L) :=	(feet)	0.
9	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ft	QED Bladder Pump Intake 580'
1254	22.7	7,41	1470	2,86	13.8	0,29	5,0	0105	clear, NO ODORS
1257	2217	7,42	1476	3,00	1118	0.33	6,0	0,05	· ·
1300	22.7	7142	1470	3,12	10,47	0,33	7,0	0,05	
1303	23.7	7143	1469	3,10	9,50	0133	8,0	0105	
1306	2218	7,42	1470	3,11	9,25	0133	9,0	0,05	
1309	22,8	7141	1469	3,01	9,18	6173	10,0	0105	
									Low How for VOC
			-						
		<u> </u>							2,4

Sample ID: MW-01-LBF Sample Time, 1316 Duplicate (ID = 11 Time 11 Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT:	Florence	Copper	

WELL ID: MW-01-LBF

M. Orcutt SAMPLED BY:

DATE: 3/2418

WELL INFORMATION

TD Casing:

630 feet

feet

System Purge before Params

Static Depth to Water:

liters 5.0

Time Purge Start:

Time Sample Start:

Time Purged:

minutes

hours

hours

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume (L)	Pulldown DTW (feet)	Comments
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min		<0.5 ft	QED Bladder Pump Intake 580'
11:36	23,4	7,61	1491	2.24	5.78	0,29	5,0	0,02	Clear, NO ODORS
11',40	23,4	7.59	1490	2,54	5,45	0:25	610	0,02	
11:44	23,2	7.57	1491	1:19	3170	0125	7.0	0,02	
11:48	23.4	757	1490	1,08	2.23	0125	8,0	0,02	
		91			181				
			<u> </u>	N.					
									Cow How for Noc's
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<u></u>				[!	
				<u> </u>	<u> </u>				
				<u> </u>					
		<u>. </u>							2.4

Sample ID: MW-01-LBF Sample Time, 11:50 Duplicate (ID = M63.0, Time 12:10) Analyses Requested: Level II - Metals, Inorgs, Radios, BTEX, TPH-D

PROJECT: Florence Copper	
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WELLID: MW-01-0

SAMPLED BY: ____

M. Orcutt ____

WELL INFORMATION

TD Casing: 1,200 feet

Time Purge Start:

DATE: 3/8/18 hours

Static Depth to Water:
System Purge before Params

221,45 feet 9.2 liters

Time Sample Start: 1028

hours

Time Purged:

minutes

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume	Pulldown DTW	Comments
			(uninos) ciri)	(IIIB/r)	(1410)	(2)	(L)	(feet)	
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min	*	<0.5 ft	QED Bladder Pump Intake 1000'
1016	22,5	7,69	1378	3,00	4.52	0,29	9,5	0.25	Clear, NO ODOIES
1620	22.6	7.71	1363	2,73	2116	0125	105	0127	
1023	22,6	7.75	1352	260	1165	0133	11,5	0132	
1026	22,6	7,72	1351	2,51	1,60	0133	12,5	0132	
									Low flow for VX'3
						<u></u>			
							_		
							<u> </u>	1	2,4,6,8

Sample ID: MW-01-O Sample Time, 1028 Duplicate (ID = 1/4, Time 1/4) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

ROJECT: Florence Copper			¥01	WELL ID:	MW-01-O	
				SAMPLED BY:	M. Orcutt	
VELL INFORMATION				DATE :	3 /22/18	6
TD Casing:	1,200	feet	Time Purge Start:	0940	hours	
Static Depth to Water:	230,05	feet	Time Sample Start:	1027	hours	
System Purge before Params	9.2	 liters	Time Purged:	47	minutes	

Time	Temperature (°C)	рН	EC (umhos/cm)	DO (mg/L)	Turbidity (NTU)	Pump Rate (L/min)	Purge Volume	Pulldown DTW	Comments
							(L)	(feet)	
	+/- 3%	+/- 0.1	+/- 3%	10% or <.5	10% or <5	<0.5L/min	L	<0.5 ft	QED Bladder Pump Intake 1000'
10:13	23.0	7,66	1405	0,98	1,70	0,28	9,5	0,08	Clear, NO ODORS
10117	23,0	7,74	1423	0188	0,98	0,25	1015	0,08	
10:21	23,2	7,68	1430	0179	0,77	0125	11,5	0110	
1025	23,4	7.75	1433	0177	0170	0,25	1215	0,10	
						100			
				W					Lowered How for VOC3
					No.		-		
-									
									*
			-						
									2,416.8

Sample ID: MW-01-O Sample Time, 1027 Duplicate (ID = W/A Time W/A) Analyses Requested: Level II – Metals, Inorgs, Radios, BTEX, TPH-D

pH and TEMP CALIBRATION RECORD

Florence Copper Project

Instrument:	BC'5 YS1556
SN:	154102406
Probe SN:	60036

APP Sampling Event

Month: Manch

Year: <u>2018</u>

Calibration Procedures:

-pH calibration/measurement should be performed in accordance with protocols set forth by **Standard Methods for the Examination of Water and Wastewater** – <u>4500 H pH.</u> Gentle agitation or stirring of sample should maintained during pH calibration and sample analysis.

-Temperature measurement should be performed in accordance with protocols set forth by **Standard Methods for the Examination of Water and Wastewater – 2550 Temperature** using an NIST traceable thermometer.

Calibration Standards Used:

Standard	Manufacturer	Lot#	Received	Expiration
4.00	ENVISUADY	76H 056	2/20/18	Augh
7.00	1	76K703	3/5/18	NOV 19
10.00	1,	761-884	2/22/18	Jun 19
7.00 Chk		764695	315/18	Dec 19

9H4,10 New 3/8/18 W/ Same Lot #

9HT NEW \$/22/18

Calibration Record

Cambra	HOH KEC	Jiu										Jane Lot
Duta	Т:	Camanian	pH 4	4.00	pH ′	7.00	pH 1	0.00	pH 7.0	00Chk	Temp Chk*	Notes**
Date	Time	Sampler	T (°C)	Cal.	T (°C)	Cal.	T (°C)	Cal.	T (°C)	Cal.	T (°C)	
3/5/18	1225	Droutt							19.5	7.01		
3/6/18	0830	11	17.5	4,01	15.1	6.98	17,0	10,02	15.5	7,02		
3/6/18		- 11		-			11		24,6	6,28		
3/7/18		11						9	23.8	6198		
3/8/18	0755	ነ፣	16.3	£ 3,98	13,9	7,00	1614	10,02	13.9	7,02		
3/8/18	1235	И	2010				,		23:5	6,98		
3/22/18	1940	И	20	4.00	2013	1101	20,6	10102	202	7,02		
1 (1-0-											4	
		6. 10										
											<u> </u>	

^{*} Temperature check performed with second NIST thermometer.

^{**} If meter does not provide slope, ensure that the calibration is confirmed with a recheck of pH 7.0 in the column "pH 7.00Chk".

^{***}Perform 7-Check every 10 measurements or if Temperature increases by 15 °F.

^{****} All maintenance to instrument during the field event should be logged on this form. All maintenance should also be logged on the "Preventative Maintenance" log.

EC and DO CALIBRATION RECORD

Florence Copper Project

Instrument:	BC'3 451556
SN:	15A102400
Probe SN:	60036

APP Sampling Event

Month: _

Year:

Calibration Procedures:

- -EC calibration/measurement should be performed in accordance with protocols set forth by Standard Methods for the Examination of Water and Wastewater - 2510 Conductivity.
- -Temperature measurement should be performed in accordance with protocols set forth by Standard Methods for the Examination of Water and Wastewater - 2550 Temperature using an NIST traceable thermometer.
- -DO calibration/measurement should be performed as per manufacturer recommendations.

Calibration Standards Used:

Cambration	Standards Oscu.			
Standard Conc.	Manufacturer	Lot#	Received	Expiration
1413	Envisopy4	9CA 685	3/5/18	JEn 19
		9		
(check)	NIA	_	<u> </u>	~

Calibration Record

				Specific Conductance					DO calibration		
Date	Time	Sampler	EC	1413	EC_	1413	EC 1	413 Chk	performed?	Notes*	
	,		T (°C)	Cal.	T (°C)	Cal.	T (°C)	Cal.	Yes/No	*Changed Do Tip/Fliesd,	
3/6/18	1845	Arait			17.5	1414		_	Yes "	Notes* *Changes Do Tip/Fluid, 100%581 767.7 mm/149	
3/8/18	0815	11	()		1311	1413	_		Ves	100765AT. 765.8 "	
3/22/18	0900	11									
19	0950	Il			21,4	1413			405	10090 Sat. 7688 3 1/10	
		.71									
* All ma	aintenance	to instrument	during the fiel	ld event should be	logged on this	s form. All mainter	nance should al	so be logged on the	"Preventative Maintenand	ce" log.	

TURBIDITY CALIBRATION RECORD

Florence Copper Project

Instrument: SN:	BU'S La Motte zoroe	APP Sampling Event Month: Merch	
Probe SN:	Nitr	Year: 20/8	_

Calibration Procedures:

-Calibration/measurement should be performed in accordance with protocols set forth by *USEPA Method 180.1* using an NIST traceable thermometer.

Calibration Standards Used:

Standard	Manufacturer	Lot#	Received	Expiration
0 NTU	AMCO	C801968	3/5/18	618
1 NTU	1	C 69/6/08)	1/19
10 NTU	1.	C797837	/_	2/19
1 NTU Chk	A)	C6916108	17/	1/19

Calibration Record

445 A	COTT				Chk	
906		0100	1,01	10102	0,98	
807	<u>u </u>	0,00	1,01	10,00	0.99	
947	X	0.00	0198	9,99	0,98	
·						
	47	47 X	47 × 0.00	11 0,00 7,01 47 × 0.00 0198	47 × 0.00 0198 9,99	47 × 0.00 0198 9,99 0198

1/28/15	
N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	No Maint. Required
3/26/15	
5/4/2015	Do 16t Calibrating-
Michael	Replaced Do Sensor mambrane
	Recolibration ox. (Horence)
5/7/2015	NIST Tharmometer check
	BC-1A Model 4146 Exp 1/8/205
MIDRILL	10 - Lac VSI 556 To 0
V lielens	10 C from YSI 556 Temp.
8/10/2015	-11 11 -11 -11
MICHEUN	pt Not colibrating.
F.C.	Forced readings-
	Un calibrated and pH 7,0
	Un calibrated and pH 7.0 Re Calib. Check OK, MU+14 at DH 7.0
	at pt 70
8/13/2015	Replaced PHORP Serson
Milorati	+0.6 My-00011

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Aug	6 2	colace	J DO	2 Tip	
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Scale: 1 square =

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PH 7	- 29	7,00	Temp 24.8 cc
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Scale: 1 square =

Scale 1 square =

ade i i i i e	gram	NELAC-INIT IT					rage ror r			
	Acc	count # 5490			U:	SEPA Lab	ID		NPDES ID #	
74000									Open Date	10/30/2017
Street Suite 500						_	_	т	Close Date	12/13/2017
Component	Method Code	Method Description	>	Reported Value		Assigned Value	Acceptance Low	e Limits High	Performance Evaluation	Analysis Date
Lot#081117	WP Conductance @	25°C - DMRQA	@ 2	25 C			Invoice	# 16649	4 Units (imhos/cm
ductance @ 25 C	200	2510B		76	744	744	670	818	ACCEPT.	12/12/2017
	574000 Street Suite 500 Component Lot#081117	Account Accoun	Account # 5490 Street Suite 500 Component Method Method Code Description Lot#081117 WP Conductance @ 25°C - DMRQA	Account # 5490 574000 Street Suite 500 Component	Account # 5490 Street Suite 500 Method Method Reported Component Code Description Lot#081117 WP Conductance @ 25°C - DMRQA @ 25 C	Account # 5490 Street Suite 500 Method Method Reported AV or Component Code Description Lot#081117 WP Conductance @ 25°C - DMRQA @ 25 C	Account # 5490 USEPA Lab Study Street Suite 500 Method Method Reported AV or Assigned Component Code Description Value StudyMean Value Lot#081117 WP Conductance @ 25°C - DMRQA @ 25 C	Account # 5490 Street Suite 500 Method Method Reported AV or Assigned Acceptance Component Code Description Lot#081117 WP Conductance @ 25°C - DMRQA @ 25 C USEPA Lab ID Study # QTA Study Type External P Study Mean Value Low Invoice	Account # 5490 Street Suite 500 Method Method Reported AV or Assigned Acceptance Limits Component Code Description Lot#081117 WP Conductance @ 25°C - DMRQA @ 25 C USEPA Lab ID Study # QTA Study Type External PT AV or Assigned Acceptance Limits Lot#081117 WP Conductance @ 25°C - DMRQA @ 25 C Invoice# 16649	Street Suite 500 Street Suite 500 Study #QTA Open Date Study Type External PT Close Date Component Code Description Lot#081117 WP Conductance @ 25°C - DMRQA @ 25 C Invoice#166494 Units units units to the conductance of the conductance of the code open Description in the code open Date Study #QTA Open Date Study Type External PT Close Date Open Date Study Type External PT Close Date Open Date Study Type External PT Close Date Open Date Open Date Study Type External PT Close Date Open Date

PT Evaluation Report

Page 1 o

AbsoluteGrade PT Program

All components are formulated and verified under Absolutes' NELAC scope (ANAB Accreditation ISO 17025, 17043 (Cert.# AP-1543), Guide 34-35) as shown in blue font.





Calibration complies with ISO/IEC 17025, ANSI/NCSL Z540-1, and 9001



Cert. No.: 4372-84850

Traceable® Certificate of Calibration for Flip-Stick™ Thermometer

Instrument Identification:

Model: 4372

S/N: 170481521

Manufacturer: Control Company

Standards/Equipment:

Description	Serial Number	<u>Due Date</u>	NIST Traceable Reference
Temperature Calibration Bath TC-191	A42238		
Thermistor Module	A27129	12/01/17	1000401760
Temperature Probe	5202	12/19/17	B6B30058-1
Temperature Calibration Bath TC-218	A73332		
Thermistor Probe	5356	1/10/18	B7104024
Readout, Digital Thermometer	B5C344	3/12/18	B7314035

Certificate Information:

Technician: 104

Procedure: CAL-3

Cal Date: 4/24/17

Due Date: 4/24/19

Test Conditions:

23.7°C

47.0 %RH 1015 mBar

Calibration Data: (New Instrument)

Unit(s)	Nominal	As Found	In Tol	Nominal	As Left	In Tol	Min	Max	±U	TUR
°C		N.A.		0.000	-0.4	Y	-1.0	1.0	0.059	>4:1
°C		N.A.		90.000	89.9	Y	89.0	91.0	0.059	>4:1

This instrument was calibrated using instruments Traceable to National Institute of Standards and Technology.

A Test Uncertainty Ratio of at least 4:1 is maintained unless otherwise stated and is calculated using the expanded measurement uncertainty. Uncertainty evaluation includes the instrument under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor k=2 to approximate a 95% confidence level. In tolerance conditions are based on test results failing within specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. This certificate shall not be reproduced except in full, without written approval of Control Company.

Nominal=Standard's Reading; As Left=Instrument's Reading; In Tol=In Tolerance; Min/Max=Acceptance Range; ±U=Expanded Measurement Uncertainty; TUR=Test Uncertainty Ratio; Accuracy=±(Max-Min)/2; Min = As Left Nominal(Rounded) - Tolerance; Max = As Left Nominal(Rounded) + Tolerance; Date=MM/DD/YY

Yuod Lodrigues, Nicol Rodriguez, Quality Manager

Aaron Judice, Technical Manager

Maintaining Accuracy:

In our opinion once calibrated your Flip-Stick™ Thermometer should maintain its accuracy. There is no exact way to determine how long calibration will be maintained. Flip-Stick™ Thermometers change little, if any at all, but can be affected by aging, temperature, shock, and contamination.

Recalibration:

For factory calibration and re-certification traceable to National Institute of Standards and Technology contact Control Company.

CONTROL COMPANY 12554 Galveston RD Suite B230 Webster TX USA 77598 Phone 281 482-1714 Fax 281 482-9448 service@control3.com www.control3.com



Acknowledgement Form

Page ____ of ____

Name of Project/Site:	Project No:
Florence Copper	152044
Project/Site Location: Project/Site Location:	Permit Type (APP, AZPDES):
Employee Completing Form: (Print and Sign):	Date: 2/2/18
Employee Acknowledgement: The following signatures indicate that these personnel have read and/or been briefed on the and understand the work to be performed:	e documents indicated
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temperature by SM 2550B	
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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

PROJECT NAME Florence Copper #				kd				CIR	CLE /	ANAL	YSIS	REC	UES	TED .	AND,	OR C	HEC	K TH	IE AP	PRC	PRIA	TE B	ОХ		
CONTACT NAME <u>: Barb</u>	Sylvester				ERS			<u> </u>								28									
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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # _____ DATE ______ DATE _______ DATE _______ OF _______ OF ______

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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # ______ DATE 3/7/2018 PAGE 1 OF 1

PROJECT NAME _Florence Copper #		=		CIR	CLE	ANAL	.YSIS	REC	UES.	ΓED	AND	OR C	HEC	КТН	łE Al	PPRC	PRIA	ATE B	ОХ		
CONTACT NAME: Barb Sylvester	RS																				
COMPANY NAME : Brown and Caldwell	AINE	Filtered)			100		(qn	>12	fety)												
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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # _____ DATE 3-8-20/8 PAGE 1 OF 1

PROJECT NAME Florence Copper #							CIR	CLE	ANAI	.YSIS	REC	UES	TED A	AND,	OR (CHEC	K TH	IE AF	PRO	PRIA	TE B	ох		
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2445 N. Coyote Drive, Suite 104 Tucson, Arizona 85745 (520) 882-5880 Fax: (520) 882-9788 www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # _____ DATE 3/22/20/8 PAGE _/_ OF _/_

PROJECT NAME Florence	2 Copper ##							CIR	CLE	ANAI	LYSIS	REC	UES	TED .	AND	OR (CHEC	KTH	IE AI	PPRC	PRIA	ATE B	OX		
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